

## **Amendments to the Specification:**

*On page 1, after the title, insert the following new paragraph:*

### **CROSS-REFERENCE TO RELATED APPLICATION**

*This application claims priority to PCT Appln. No. PCT/US03/012430 filed November 6, 2003, and to German application 102 53 044.0 filed November 14, 2002.*

*At page 1, line 2, please add the following heading and subheading as shown below:*

### **BACKGROUND OF THE INVENTION**

#### **1. Field of the Invention**

*At page 1, line 9, please add the following subheading as shown below:*

#### **2. Description of the Related Art**

*At page 1, line 19, please amend the paragraph as shown below:*

~~A part of~~ In accordance with the prior art, ~~is to divide~~ water-immiscible substances, e.g. silicone oils, together with one or more emulsifiers, are stably dispersed into small droplets in water ~~in a stable manner~~. A preservative and further additives are optionally added to the emulsion.

*At page 1, line 25, please amend the paragraph as shown below:*

Highly concentrated emulsions, i.e. emulsions which contain more than 40% of siloxane, are often water-in-oil emulsions (W/O-emulsions). These W/O-emulsions are, however, not water-dilutable and therefore not ~~advantageous~~ suitable for industrial applications. Highly concentrated oil-in-water emulsions which can be immediately further diluted with water are ~~advantageous~~ desirable.

*At page 1, line 34, please amend the paragraph as shown below:*

It is known that, particularly in the case of amino-functional siloxane emulsions, ~~the~~ addition of acid or ~~the at least~~ partial conversion of the amino groups into ammonium ions, considerably improves the stability of the emulsion or, in the case of many emulsions, is absolutely essential for obtaining a shelf life sufficient for sale. This applies in particular when relatively high temperatures in the range of 35-50°C ~~cannot be ruled out~~ may occur during ~~the~~ storage. Furthermore, ~~as described in the patents cited~~, the pH of the emulsion is also important for problem-free use. The known aminosiloxane emulsions become unstable at a pH > 7 and silicone oil separates ~~out~~, which leads to undesired silicone spots on ~~the~~ textiles treated with such emulsions. This is disclosed, for example, in DE 196 52 524 A1 and DE 100 04 321 A1.

*At page 2, line 17, please amend the paragraph as shown below:*

For example, EP 417 047 A, EP 459 821 and EP 404 027 describe microemulsions or macroemulsions of aminosiloxanes, wherein acid, and optionally further[[,]] stabilizing additives are always ~~being~~ employed. Furthermore, emulsions of aminosiloxane are known[[,]] wherein ~~reference being made to the fact that~~ the aminosiloxane is present partly in salt form, ~~which is~~ an indirect indication of the concomitant use of acid. Aminosiloxanes which have been partly converted into salt form are described, for example, in DE 4 004 946, it being clearly evident from the working examples that acid is used.

*At page 2, line 36, please amend the paragraph as shown below:*

Although ~~many arguments, such as reduced transport~~ transportation and ~~stock-keeping storage costs, are~~ argue in favor of the use of emulsions which are as concentrated as possible, the solids content of siloxane macroemulsions sold on the market is typically substantially less than 50%. This is due to the fact that[[,]] although more highly concentrated siloxane emulsions can be prepared using ~~the~~ existing techniques, they have such a high viscosity or typically exhibit such an increase in the viscosity during storage that they are not suitable for the ~~predominant part majority~~ of the applications, which require good flowability and easy dilutability without complicated technical aids.

*At page 3, line 15, please amend the paragraph as shown below:*

It is therefore of interest to prepare highly concentrated, low viscosity emulsions ~~which are not obtained with the desired low viscosity by means~~ without the use of additives. Furthermore, it is of particular interest to provide highly concentrated, low-viscosity, stable emulsions which contain only a small proportion of emulsifier.

*At page 3, line 21, please add the following heading and paragraph as shown below:*

#### SUMMARY OF THE INVENTION

Highly concentrated organopolysiloxane emulsions of low viscosity may be prepared by emulsifying organopolysiloxanes bearing nitrogen-containing radicals in the presence of an emulsifier to form an emulsion having a pH greater than 7.5. The concentrated emulsions may be diluted with water using no or only modest agitation to form secondary emulsions having a highly unexpected uniform particle size.

*At page 3, line 21, please add the following heading as shown below:*

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT(S)

*At page 3, line 22, please amend the paragraph as shown below:*

The invention ~~relates~~ thus pertains to highly concentrated oil-in-water emulsions of organopolysiloxanes, which contain

- (A) at least 45% by weight of organopolysiloxane(s) which, in addition to the elements Si, O, C and H, also contains elements which are selected from N and S,
- (B) emulsifier, and
- (C) water,

the highly concentrated emulsions having a pH of at least 7.5 and a viscosity at 25°C of not more than ~~50-000~~ 50,000 mPa.s.

*At page 3, line 33, please amend the paragraph as shown below:*

The emulsions according to the invention are distinguished by the following properties: in spite of the high siloxane content, they are readily flowable and have a relatively low viscosity[[,]]; are readily dilutable with water and then form stable secondary emulsions; ~~they~~ and have a long shelf life both in concentrated and in dilute form. Emulsions whose viscosity at 25°C is not more than ~~50-000~~ 50,000, in particular not more than ~~30-000~~ 30,000 and preferably not more than ~~15-000~~ 15,000 mPa.s are defined as being readily flowable.

*At page 4, line 6, please amend the paragraph as shown below:*

The pH of the prepared emulsion is at least 7.5 and preferably at least 8. The emulsions according to the invention preferably have a narrow particle size distribution. The mean particle sizes are preferably in the range from 10 to 500 nm, in particular from 10 to 300 nm. These emulsions are preferably prepared using the conventional emulsification apparatuses (e.g. colloid mill, high-speed stirrer/dissolver, rotor/stator dispersing machines, ultrasonic

apparatuses and high-pressure homogenizers) in a continuous or batch procedure. In one preferred embodiment, The batch preparation takes place in a stirred vessel which has, as a shear tool, a rotor-stator homogenizer contained in the vessel (e.g. type UMA 9/50 from IKA-Werke, D-79219 Staufen), or outside the stirred vessel in a pumped circulation line (e.g. DISHO S-160-85 from Koruma, D-79359 Neuenburg) ~~is frequent~~. An additional feed pump for increasing the pressure, optionally with pressure regulation, and for transporting highly viscous intermediates or end products can optionally be installed in the pumped circulation line.

*At page 5, line 3, please amend the paragraph as shown below:*

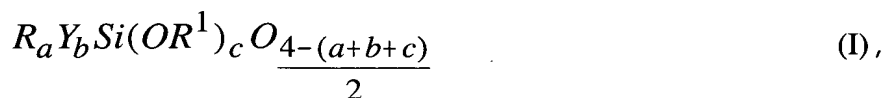
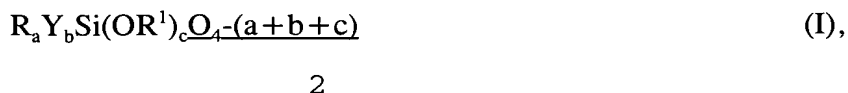
Furthermore, the stability of the dilutions prepared from emulsions according to the invention and diluted without shearing or with only slight shearing is higher than that of the emulsions diluted directly in the emulsion preparation to the solids content of the end product. This also applies at elevated temperature, for example in the range of 35-50°C. It was also surprisingly found that emulsions according to the invention which are diluted without shearing or only with slight shearing, in particular only by shaking or by means of a low-speed stirrer, have, after dilution, a particle size distribution which is narrower than that of those emulsions diluted directly in the emulsion preparation to the solids content of the end product.

*At page 5, line 18, please amend the paragraph as shown below:*

The invention also relates to a process for the preparation of emulsions having a narrow particle size distribution, in which highly concentrated emulsions according to the invention are diluted without shearing or with only slight shearing. The shearing is preferably not more than 100·1/sec, in particular not more than 50·1/sec.

*At page 5, lines 33 and 36, please amend the paragraphs as shown below:*

Organopolysiloxane(s) (A) ~~is~~ are preferably liquid at 25°C, and preferably ~~has~~ have viscosities of from 0.5 to ~~500-000~~ 500,000 mPa·s, in particular from 2 to ~~80-000~~ 80,000 mPa·s[[.]], and ~~Organopolysiloxanes (A)~~ are preferably composed of units of the general formula I



in which

R is a hydrogen atom or a monovalent organic radical which contains elements which are selected from O, C and H,

R<sup>1</sup> is a hydrogen atom, an alkyl radical or an alkoxyalkyl radical,

Y is a monovalent, SiC-bonded radical which contains elements which are selected from O, C and H and additionally contains elements which are selected from N and S,

a is 0, 1, 2 or 3,

b is 0, 1 or 2 and

c is 0, 1, 2 or 3,

with the proviso that the sum of a, b and c in the units of the general formula (I) is less than or equal to 3 and at least one radical Y is contained per molecule.

*At page 9, line 23, please amend the paragraph as follows:*

The component (B) of the emulsions according to the invention preferably comprises commercially obtainable and ~~thoroughly investigated~~ well known emulsifiers, such as, for example, sorbitan esters of fatty acids having 10 to 22 carbon atoms; polyoxyethylene sorbitan esters of fatty acids having 10 to 22 carbon atoms and an ethylene oxide content of up to 35 percent; polyoxyethylene sorbitol esters of fatty acids having 10 to 22 carbon atoms; polyoxyethylene derivatives of phenols having 6 to 20 carbon atoms on the aromatic and an ethylene oxide content of up to 95 percent; fatty amino- and amidobetaines having 10 to 22 carbon atoms; polyoxyethylene condensates of fatty acids or fatty alcohols having 8 to 22 carbon atoms and an ethylene oxide content of up to 95 percent; ionic emulsifiers, such as

alkylarylsulfonates having 6 to 20 carbon atoms in the alkyl group; fatty acid soaps having 8 to 22 carbon atoms; fatty sulfates having 8 to 22 carbon atoms; alkanesulfonates having 10 to 22 carbon atoms; alkali metal salts of dialkylsulfosuccinates; fatty amine oxides having 10 to 22 carbon atoms; fatty imidazolines having 6 to 20 carbon atoms; fatty amidosulfobetaines having 10 to 22 carbon atoms; quaternary emulsifiers, such as fatty ammonium compounds having 10 to 22 carbon atoms; fatty morpholine oxides having 10 to 22 carbon atoms; alkali metal salts of carboxylated, ethoxylated alcohols having 10 to 22 carbon atoms and an ethylene oxide content of up to 95 percent; ethylene oxide condensates of fatty acid monoesters of glycerol having 10 to 22 carbon atoms and an ethylene oxide content of up to 95 percent; mono- or diethanolamides of fatty acids having 10 to 22 carbon atoms; alkoxylated silicone emulsifiers having ethylene oxide and/or propylene oxide units; and phosphate esters.

*At page 10, line 20, please amend the paragraph as shown below:*

As is well known in the area of emulsifiers, the ~~opposite~~ counterions in the case of anionic emulsifiers may be alkali metals, ammonia or substituted amines, such as trimethylamine or triethanolamine. Usually, ammonium, sodium and potassium ions are preferred. In the case of cationic emulsifiers, the ~~opposite~~ counterion is preferably a halide, sulfate or methylsulfate. Chlorides are the compounds which are most available industrially.

*At page 10, line 29, please amend the paragraph as shown below:*

The abovementioned fatty structures are usually the lipophilic half of the emulsifiers. A conventional fatty group is an alkyl group of natural or synthetic origin. Known unsaturated groups are the oleyl, linoleyl, decenyl, hexadecenyl and dodecenyl radicals. Alkyl groups may be cyclic, linear or branched. Other possible emulsifiers are sorbitol monolaurate/ethylene oxide condensates; sorbitol monomyristate/ethylene oxide condensates; sorbitol monostearate/ethylene oxide condensates; dodecylphenol/ethylene oxide condensates; myristylphenol/ethylene oxide condensates; octylphenol/ethylene oxide condensates; stearylphenol/ethylene oxide condensates; lauryl alcohol/ethylene oxide condensates; stearyl

alcohol/ethylene oxide condensates; decylaminobetaine; cocoamidodisulfobetaine; oleylamidobetaine; cocoimidazoline; cocosulfoimidazoline; cetylimidazoline; 1-hydroxyethyl-2-heptadecenylimidazoline; n-cocomorpholine oxide; decyldimethylamine oxide; cocoamidodimethylamine oxide; sorbitan tristearate having condensed ethylene oxide groups; sorbitan trioleate having condensed ethylene oxide groups; sodium or potassium dodecylsulfate; sodium or potassium stearylsulfate; sodium or potassium dodecylbenzenesulfonate; sodium or potassium stearylsulfonate; triethanolamine salt of dodecyl sulfate; trimethyldodecylammonium chloride; trimethylstearyl ammonium methosulfate; sodium laurate; and sodium or potassium myristate.

*At page 11, line 29, please amend the paragraph as shown below:*

The emulsions according to the invention may ~~furthermore have~~ also contain further organosilicon compounds as a component (D). Examples of organosilicon compounds (D) are silanes, silicone oils which contain no elements N and S, and silicone resins.

*At page 12, line 1, please amend the paragraph as shown below:*

Suitable silicone oils (D) are all liquid silicones which contain no element[s] N ~~and S~~ and which are substituted or unsubstituted and have viscosities of from 0.5 to ~~500-000~~ 500,000 mPa·s, in particular from 0.5 to ~~80-000~~ 80,000 mPa·s, at 25°C.



*At page 14, line 26, please amend Table 2 as shown below:*

Table 2: Formulations X 608 and X 610:

	X 608 (Comp.)		X 610	
Starting materials	Amount [g]	%	Amount [g]	%
IT 10/80	35.00	5.0	35.00	5.7
IT 5	20.00	2.8	20.00	3.3
Amine oil 1	354.00	50.2	354.00	57.9
DM water	294.00	41.7	202.00	33.1
Acetic acid, 80%	1.70	0.2	0.00	0.0
Total	704.70	100.0	611.00	100

*At page 15, line 1, please amend Table 3 as shown below:*

Table 3

Result	X 608 (Comp.)	X 608 dilute	X 610	X 610 dilute
Solids content in %	56.6	38.0	67.09	39.9
Particle size in nm	148	170	209	228
Particle size distribution	narrow	broad	narrow	broad
Viscosity in mPa•s (25°C); Brookfield Spindle 2, 2.5 1/min	firm	--	1230	--
pH	6.0	--	8.5	--

*At page 15, line 6, please amend Table 5 as shown below:*

**Table 5: Formulation VS 204 (Comparative) (prepared from K 793 with addition of acetic acid) and results:**

	Amounts of K 793 + acetic acid	Viscosity (25°C) Brookfield Spindle 2; 2.5 1/min	Particle size
Experiment number	Amount [g]	(mPa·s)	(nm)
K 793	450 + 0	1400	205
VS 204/2	450 + 0.12	<del>10,625</del> <u>10,625</u>	202
VS 204/3	450 + 0.58	<del>21,250</del> <u>21,250</u>	184
VS 204/4	450 + 1.16	<del>21,750</del> <u>21,750</u>	138

*At page 16, please amend Table 6 as shown below:*

**Table 6: Formulations H 601/1 and H 601/2:**

	H 601/1		H 601/2 ( <u>Comp.</u> )	
Starting materials	Amount [g]	%	Amount [g]	%
IT 10/80	54.00	8.7	54.00	8.7
Amine oil 2	330.00	53.2	330.00	53.2
DM water	236.00	38.1	232.00	37.4
Acetic acid, 80%	0.00	0.0	4.00	0.6
Total	620.00	100.0	620.00	100.0

*At page 16, line 5, please amend Table 7 as shown below:*

**Table 7: Results for H 601/1 and H 601/2:**

Result	H 601/1 (without acetic acid)	H 601/2 (with acetic acid)
Solids content in %	60.2	60.2
Particle size in nm	172	147
Viscosity at 25°C in mPa•s (Brookfield, spindle 2)	1100	<del>76-500</del> <u>76,500</u>
pH	9.0	4.5